

Abstract

A system and method for performing modeling, prediction, optimization, and control, including an enterprise wide framework for constructing modeling, optimization, and control solutions. The framework includes a plurality of base classes that may be used to create primitive software objects. These objects may then be combined to create optimization and/or control solutions. The distributed event-driven component architecture allows much greater flexibility and power in creating, deploying, and modifying modeling, optimization and control solutions. The system also includes various techniques for performing improved modeling, optimization, and control, as well as improved scheduling and control. For example, the system may include a combination of batch and continuous processing frameworks, and a unified hybrid modeling framework which allows encapsulation and composition of different model types, such as first principles models and empirical models. The system further includes an integrated process scheduling solution referred to as process coordinator that seamlessly incorporates the capabilities of advanced control and execution into a real time event triggered optimal scheduling solution.